

Faculty of Education

Lesson Plan Template

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| **Subject / Course:** Math | **TC Name:** Ms Victoria Lyttle |
| **Grade Level:** 7/8 | **Date:** October 18, 2010 |
| **Topic:** Mean, Median, Mode | **Time of Class:** 12:35-1:15pm; 2:05-2:45pm |
| **AT Name:** Mr Andrew Moss | **Room # / Location:** 22 |
| **1. Instructional Expectations and Opportunities** |  |
| 1. **Expectations**:  |  | | --- | | * collect data by conducting a survey or an experiment to do with themselves, their environment, issues in their school or community, or content from another subject and record observations or measurements; * determine, through investigation, the effect on a measure of central tendency (i.e., mean, median, and mode) of adding or removing a value or values (e.g., changing the value of an outlier may have a significant effect on the mean but no effect on the median) (***Sample problem:*** Use a set of data whose distribution across its range looks symmetrical, and change some of the values so that the distribution no longer looks symmetrical. Does the change affect the median more than the mean? Explain your thinking.); | | |
| 1. **Goal(s) for the lesson:**  |  | | --- | | 1. Students will have a better grasp of mean, median and mode 2. Students will take data via a survey and find its mean, median, and mode 3. Students will plot data as a scatter graph 4. Students will look for a correlation in the data | | |
| **2. Preassessment and Accommodations/Modifications** | |
| |  |  | | --- | --- | | **Preassessment:** | **Accommodation/Modification** | | **Academic Needs:**  **Behavioural/Social/Emotional Needs:**  **Physical Needs**  **Diversity Needs:** | Finish Early: Have them work on their consolidation   Ticket-Out-of-Class  Cannot Understand: Try explaining concept again using   a different angle (easier   terminology, gestures, diagrams)  Easily Distracted: Engage students who are easily   distracted; Keep class flowing so   things don’t stay the same too long.  Don’t Participate: Think-Pair-Share  Talk Out: Don’t take their answers unless they raise   their hands.  N/A  N/A | | |

**3. Learning Environment**

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| Classroom, in desks for majority of class.  Will use back of classroom to line up in order of height and shoe size. |

**4. The Overview (Agenda) for your lesson:**

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| Review of 3Ms  Minds On: Mean Money  Outliers  Survey |

**5. Resources and Materials for your class**

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| * Dry erase markers * White board * Calculator * Grid paper * Hand outs * Money Value Cards |

**6. Content, Teaching Strategies, for Lesson**

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| ***Time*** | ***Teaching or***  ***Assessment Strategy*** | ***Detailed Description*** |
| *0.5 min* | ***Before Class:***  ***Introduction***  *Greet class* | *Welcome back in from recess. Did you enjoy it? How many played sports or ran around? How many hung out and chatted? (Just get an idea of what they did... Shows you’re interested in them.)* |
| *0.5 min*  *0.5 min*  *5 min*  *5 min*  *5 min*  *2 min*  *2 min*  *5 min*  *0.5 min*  *2 min*  *4 min*  *4 min*  *4 min*  *5 min*  *2 min*  *2 min*  *2 min*  *25 min*  *0.5 min* | ***Instruction***  ***First Half***  *Review of last class*  *Data sets*  *Table*  *Review Mean*  *Review Median*  *Review Mode*  *Analysis*  *Minds On*  *VIP Book*  *Outliers*  *Mean Think-Pair-Share*  *Think*  *Pair*  *Share*  *Median Think-Pair-Share*  *Think*  *Pair*  *Share*  *Mode Think-Pair-Share*  *Think*  *Pair*  *Share*  ***Second Part***  *Activity*  *Transition* | ***12:35 – 1:15pm***  *Put up two sets of numbers on the board:*  *11 6 12 5 13 7 12 7 13 5*  *6 5 7 7 5 6 7 7 9 8 6 5 5*  *Put table on board:*   |  |  |  |  | | --- | --- | --- | --- | |  | ***Mean*** | ***Median*** | ***Mode*** | | ***Data Set 1*** |  |  |  | | ***Data Set 2*** |  |  |  |   ***Does anyone remember what a mean is?***  *Mean (aka Average): sum of the data values divided by the number of data values*  ***Find mean of above two data sets:***  ***Does anyone remember what a median is?***  *Median: the middle number when numbers in a set are arranged in order*  *First Step: Put values in order from lowest to highest*  *Second Step:*  *Odd number of data point: Find middle value*  *Even number of data points: find two values on either side of middle point   and take the mean of the two.*  ***Find the median of the two data sets:***  ***5 5 6 7 7 11 12 12 13 13***  ***= 11+7***  ***2***  ***= 9***  ***5 5 5 5 6 6 6 7 7 7 7 8 9***  ***= 6***  ***Does anyone remember what the mode is?***  *Mode: number that occurs the most often*  *\*Note: Sometimes there is more than one mode ex/ 1, 1, 2, 2, 3*  *Sometimes there is no mode for a set of values ex/ 1, 2, 3, 4, 5*  ***Find the mode of the two data sets:***  *5, 7, 12, 13*  *5, 7*  ***What do you notice about these numbers?***   |  |  |  |  | | --- | --- | --- | --- | |  | ***Mean*** | ***Median*** | ***Mode*** | | ***Data Set 1*** | *9* | *9* | *5,7,12,13* | | ***Data Set 2*** | *9* | *6* | *5,7* |   *Students should see that they are all close.*  *Out of curiosity, where do you think I got these numbers from?*  *Answer: weather for the next few days (Data set 1 = highs and lows; Data set 2 =   lows)*  *Minds on: Mean Money*   * *I need 5 volunteers* * *Take 5 volunteers* * *In my hand I have 5 pcs of metaphorical money, the average is amount of what I have is $10 (1- $2; 1- $3; 2- $1; 1- $43)* * *I want you to guess approximately what value of money you think is each person has. Remember, the mean is $10. (Have students write this on whiteboards)* * *Once everyone has taken a guess, have volunteers open up amount that they have* * *Ask students to check the math if they want.* * *Ask what happened.* * *Was the mean a good way to represent the data? What would be better?* * *Have volunteers sit back down*     *Have students get out VIP book*  ***Outlier****: a number in the data set that is significantly different than the others*  *Ex/ 1 1 2 3 43*  *In above example the 43 would be considered an outlier. This is why it’s important to have other methods of analyzing and interpreting data.*  *So, where in the everyday world would we use averages?*  *Think about it for about 20 seconds*  *Share it with the person sitting next to you*  *Take answers: sports, weather, marks*  *Where would we use a median?*  *Think about it for a few seconds*  *Share it with the person sitting next to you*  *Take answers from students: if data has obvious outliers*  *Here’s a trickier one: where would someone ever use mode?*  *Think to self*  *Share with partner*  *Take answers: stores with shoe sizes, clothing sizes, etc*  ***2:05-2:45pm***  *Quick few rounds of Atom to get them up and moving*  *Freeze, eyes-on-me*  *Without speaking, line up from shortest to tallest along back of the classroom*  *Check line up*  *Something a bit more challenging, line up from smallest to largest show size*  *Split class up into four groups with varying shoe sizes*  *Hand out graph paper and handout*  *Have students do what the handout says (make table for group, one column being height, one column for shoe size; Have them find mean, median, mode data, have them plot data on grid paper; is there a correlation? If so what kind, if not, how do you know?)*  *Once done, have them sit at their own desks* |
|  | ***Application*** | *Students should be able to see where in the real world one would use the mean, the median, or the mode. The mean is most often used in their day-to-day lives when they are dealing with school, sports stats, etc. The median is useful when dealing with data containing outliers. The mode is useful in things like retail (clothing size, shoe size, etc).* |
| *2 min*  *1.5 min* | ***Consolidation***  *Blind survey class*  *TOC* | *Have students close their eyes and raise their hands in a fist. Open hand if you understand how to find the mean? Close your hands. Median? Mode? Open your hand if you know what an outlier is. Close your hands. Thank you, you may open your eyes.*  *Have them work on TOC: more mean, median, and mode questions*   * *Let students take it home to do as a study aid* |

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| ***Name*** | ***Height*** | ***Shoe Size*** |
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***Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_***

1. ***In the table provided, record the names of your group members (including yourself), your heights, and your shoes sizes.***
2. ***Find the mean:***
   1. ***Height of your group***
   2. ***Shoe size of your group***
3. ***Find the median:***
   1. ***Height of your group***
   2. ***Shoe size of your group***
4. ***Find the mode:***
   1. ***Of the height of your group (if there is one. If not, write there is no mode)***
   2. ***Of the shoe size of your group (if there is one. If not, write there is no mode)***
5. ***Plot the height versus the shoe size of each of your group members on the provided graph paper.***
6. ***From your graph, is there a correlation between a person’s height and their shoe size? If so, what kind of correlation is it? If not, how do you know?***

**Ticket Out of Class**

**Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

1. ***For the following numbers:***

**30 66 65 72 78 93 70 68 64 90 65 68 72**

1. ***Calculate the mean.***
2. ***Find the median.***
3. ***Find the mode.***
4. ***Circle the outlier***

**30 66 65 72 78 93 70 68 64 90 65 68 72**

1. ***If I were to remove 30, what would that do to the mean, median, and mode?***
2. ***For the following numbers***

***0 5 4 5 2 7 9***

***Find:***

1. ***The mean***
2. ***The median***
3. ***The mode***
4. ***What do you notice about the mean, median, and mode?***
5. ***Challenge question:***

***For the following numbers:***

***5 5 5 6 5 7 0 5 1 7 7 5 6 5 5 5 8 5 0 5 4 5 2 7 9***

***Find:***

1. ***The mean***
2. ***The median***
3. ***The mode***
4. ***If I removed the number 5, what would the new mean, median, and mode be?***

**7. Reflections: To be completed after you have taught the lesson.**

**a) Effectiveness of your lesson***.*

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| **What was effective/ineffective about your lesson** | **How do you know?** | **What steps will you take to improve?** |
| *Students understand mean, median, mode* | *Were able to do the board work I gave them while I was circulating around.* | *Continue to give ample examples.* |
| *Group work activity was rather ineffective* | *Some students would rather bicker or not participate than work as a group* | *Do not put certain students together (ex/ J&N, A&T)* |

**b) Effectiveness as a Teacher:**

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| **What was effective/ineffective about you as a teacher?** | **How do you know?** | **What steps will you take to improve?** |
| *Need to address student’s bad behaviour on the spot* | *Student gave me a Nazi salute when I asked for people to close their eyes and raise their hands* | *Make this a teachable moment if it happens again. Have students recognize what that is, discuss anti-Semitism, discuss hate crimes, discuss consequences, and send student out to hall for further discussion.* |
| *Activity sheet needs more time* | *Students who were on task needed more time to finish up* | *Allow for more time for students who are working, give alternate task to those off task* |